



WATER TAP

WASHINGTON'S DRINKING WATER NEWSLETTER

Drought and Drinking Water

Drought is a period of unusually dry weather that persists long enough to cause serious problems, such as water supply shortages. Large and small drinking water systems must prepare to address the challenges of low water supply – or no water. This edition of *Water Tap* provides information and resources to help water system operators prepare and cope with water shortages.

Statewide Drought Declaration

On March 10, 2005, Governor Christine Gregoire authorized the Washington State Department of Ecology to declare a statewide drought emergency following an unusually dry winter – among the 10 driest winters in most areas of the state.

In addition, snowfall was below normal due to unseasonably warm temperatures. Snow pack that normally replenishes

reservoirs and stream flows during summer months was 25 percent to 60 percent of normal. It was virtually gone by June 1. As a result, many streams will not have their normal spring runoff or a good supply of water over the summer months. Aquifers that are recharged from the snow pack and summer runoff will also be affected.

Although many areas of the state experienced normal to above normal rainfall this spring, water sources dependent on surface water flow are at risk. Reduced stream flows can affect water intakes and reservoir levels, which can reduce available water supply. Some areas in the state are already experiencing water shortages. See Page 3 for descriptions of vulnerable systems.

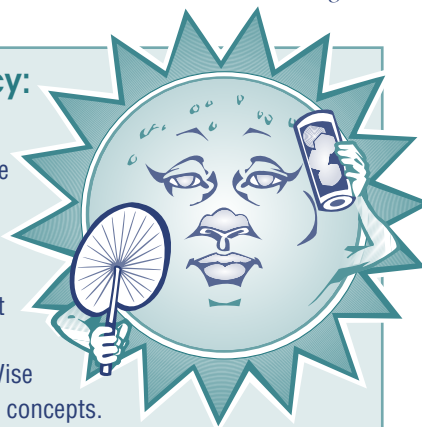
(Continued on Page 3)

Water Conservation & Water Use Efficiency: “Two Sides of the Same Coin”

Over the past year, *Water Tap* articles have covered water use efficiency and conservation as they relate to water supply, Municipal Water Law, metering, and water system planning. With drought conditions in many parts of the state, you will see the terms used repeatedly – but in a slightly different context. It may raise questions: *Are conservation and water use efficiency the same? If not, how do they differ?* Wise water use is the key to understanding the link between these concepts.

Water use efficiency programs and conservation activities are tools that water systems and their customers use to keep their drinking water resource safe, reliable, and affordable – now and into the future. Water conservation and water use efficiency are two sides of the same coin.

- **Water conservation** is the efficient use of water today, in a manner that protects and preserves the value and availability of the water supply for future uses.
- **Water use efficiency** is minimizing supply and demand inefficiencies throughout a water system with the goal of reducing water withdrawals, and ultimately, water use.



Volume 20, #4 - July 2005

SPECIAL EDITION

Drought Emergency Funds
See Page 2

10 Ways to Be Prepared for a
Drought-Related Water Shortage
See Pages 4-5

**It's Worth
Saving**
Drinking Water

Inside This Issue

Director's Column.....	2
Drought Emergency Funds	2
Snow “No-Show” Key to the 2005 Drought	3
Vulnerable Water Systems.....	3
Planning and Preparation Are the Keys to Maintaining Supply	4-5
Emergency Drinking Water Sources	6
Drought-Related Resources	7 & 8

THE DIRECTOR'S COLUMN

BY DENISE ADDOTTA CLIFFORD



Drought conditions can affect drinking water systems in different ways, including source limitations or depletion, damage to pumps and other system infrastructure, deteriorating water quality, and supply disruption.

These are all very real challenges

to the operation of a system.

The challenges of drought have a human component too, something we should not forget as we address the operational issues. The lives of your customers could be dramatically affected by the actions your system may be required to take to deal with drought conditions.

In the worse case, where water delivery is discontinued, customers could be forced to temporarily relocate or use temporary sanitation facilities. They may have to carry drinking water for household use from a tanker truck in gallon milk containers. If temperatures are extreme, some older or frail customers may become ill or even die.

Even in less severe scenarios, there is risk of disruption to normal living, inconvenience, and illness from contaminated sources.

Our conversations with you over the past year about water use efficiency seem all the more timely given the current water supply situation. We all hope that water supply conditions across the state continue to improve. But it's sensible to plan for a drought or water-shortage emergency before it occurs – to minimize the risk of illness and death, and disruption to the lives of your customers.

This is also a good time to communicate with customers about the potential for disruption and ways they can prepare for potential water shortages. Using water wisely is always important and even more so when there is a risk of water curtailment. Take some time to visit the **Water Use Efficiency** Web site, http://www.doh.wa.gov/ehp/dw/our_main_pages/water_use_efficiency.htm for ideas you and your customers can use to make wise water use the norm.

Remember, the actions you take now won't be wasted. Planning, preparation and communication are the keys to staying on top of any drinking water emergency. Drought

is no exception. As always, the Office of Drinking Water is here to help. Don't hesitate to call us as you develop plans and work through your drought contingencies.

Drought Emergency Funds Available

Public facilities and utilities supplying drinking water that are affected by the 2005 drought may be eligible for state emergency grants for drought-related projects. About \$2.35 million is available to public water suppliers as part of \$8.2 million in emergency drought relief funding Governor Christine Gregoire approved in May.

The Department of Ecology allocates and administers the grants, and recently adopted an emergency rule that outlines the eligibility requirements and application procedures.

Publicly-owned municipal water systems, water districts, public utility districts, and other special purpose districts (including those formed in response to the current drought emergency) can apply for emergency funding. Eligible projects include:

- Modification of existing sources (including deepening of a well)
- Development of an emergency water source
- Acquisition of alternative water sources (including purchasing or leasing water rights)
- Replacement of existing sources.
- Construction of emergency interties (interconnections) with another approved water system
- Transmission pipelines
- Pumps and accessories
- Source meters
- Conservation programs
- Drought-related education programs
- Leak detection

For more information about emergency drought funding and an application, go to the Washington State Drought Web site, <http://www.washingtondrought.org> and click on *Drought Emergency Funding*. Information is also available from Ray Newkirk, Department of Ecology, (360) 407-6630 or rnew@ecy.wa.gov

Drought Preparation and Response

Some smaller water systems may fail as result of the stress of drought. Extended hot spells can increase the demand for water, stressing a water system's ability to keep up with demand. Sources can go dry. Pumps and other mechanical systems can break, causing a loss of pressure or a water outage, and creating an opportunity for contamination to enter the system.

All water systems must prepare for potential water shortage-related problems.

The Office of Drinking Water is providing special training to help small water system owners and operators with drought and water shortage planning and response (see Page 7). In addition, the 2005 Legislature provided emergency funds to assist systems facing shortages (see Director's Column at left).

Snow "No-Show" Key to the 2005 Drought

Mention drought and thoughts of hot sunny weather, deserts, parched fields, and brown lawns come to mind. Certainly not the wet spring we have seen in Washington. In May, rainfall in many watersheds across the state was 150 percent of normal. The forecast for June, July, and August calls for warmer and slightly wetter than normal weather. If the forecasts are correct, how can we have a drought? The answer lies in two words: "No Snow."

Early in March, water supply conditions across the state were well below 70 percent of normal. Many river basins were at 50 to 60 percent of normal. Lack of snow pack was the critical factor. February and early March were dry months, December and January were wet. The common thread was warmer than normal temperatures. Even with our early winter rains and wet spring, snow wasn't accumulating in the mountains.

The key to understanding the impact of the 2005 drought on water systems is to understand that the state's water supply depends on snow for storage. Snow, or rather, melting snow at the right time of year, is critical for recharging surface waters and aquifers. Winter of 2005 was marked by some of the lowest snow pack measurements on record. No snow in winter means very low flows in summer and even lower flows in the fall. Those same months (July through

September) happen to be the time with the highest demand for water.

So even with a wet and warm spring and summer, the drought of 2005 is real.

Vulnerable Water Systems

With drought conditions affecting various areas of the state, many people are wondering what types of water sources are at risk. The effects of drought can be highly localized and dependent on system characteristics as well as weather and hydrology. Neighboring systems may experience the drought very differently depending on their water sources, their water storage capability, and the condition of their facilities. Following are the characteristics of the most vulnerable systems.

Surface Water Supplies

Any water system that depends on a surface water source needs to be concerned with drought. Specifically, they need to consider their supply, storage capacity, demand, and how those elements will compete as the summer progresses. Without the buffer of snow pack to help balance summer and fall demand against supply, these systems may be at risk. Careful reservoir and storage management, coupled with conservation and wise water use, can help mitigate potential drought impacts.



Snow-fed Springs and Shallow Groundwater

Like surface water, these sources will see a dramatic drop in supply as the summer continues. Water levels will decline and systems may see drops in production. This could include potential water shortages if water levels drop below intakes and pumps. In addition to demand management and conservation, these systems should review their emergency source options.

Groundwater Sources Strongly Linked to Surface Waters

These sources, while based on groundwater, will see aquifer levels drop as river levels drop. The stronger the hydraulic connection with surface water, the greater the potential drought effect. For these sources, potential drought impacts will most likely occur from late summer into the fall. Monitoring water levels in these wells over the summer will help the water system gauge the severity and potential of a drought effect.

Planning & Preparation Are the Keys to Maintaining Supply



Planning for a drought may make the difference between having adequate water and running out. All public water systems, from the smallest to the largest, should have plans for water-shortage response and conservation.

As a water system professional, how would you react if you were suddenly faced with a water shortage that could

disrupt supply indefinitely? What can you do ahead of time to avoid the situation? What do you tell customers? What alternative means for delivering water might be available?

If you plan ahead, your system can avoid, or be prepared to address, a drought-related water shortage.

Customer Communication

Effective communication with customers is integral to successful water system operations and should be part of a system's overall and emergency planning. During emergencies, such as a drought, customers may be concerned or upset, so it's important to earn their trust early. Communicating as directly as possible about drought impacts before they occur may pave the way to better cooperation when it's time to implement water conservation or curtailment measures.

During times of drought, it's especially important to understand and plan your messages carefully. Coordinate with local and state health officials to develop key messages and ways to deliver them. It's important to strive for clarity, avoiding jargon and technical terms.

When the crisis is over, promptly deliver the good news to customers and thank those who assisted in resolving the event. By asking customers to evaluate how you did and make recommendations on what would work better for them, you can be better prepared for the next emergency situation.

10 Ways to Be Prepared for a Drought-Related Water Shortage

1. **Develop a water shortage response plan** with detailed actions for water conservation and, in extreme situations, water curtailment. Drought is another type of drinking water emergency – one you can plan and prepare for. *Guidelines for the Preparation of Water Shortage Response Plans* is available through the Office of Drinking Water (see sources at bottom right).
2. **Designate** a water shortage or emergency-response coordinator to ensure effective preparation, communication, and technical procedures are in place.
3. **Develop a conservation plan** and distribute water conservation information to your customers. Now is the time to develop or update conservation plans. It is never too soon to educate customers about wise water use and conservation. There are three basic steps to educating customers about water conservation:
 - Establish the need to conserve.
 - Define wise water use practices.
 - Provide the information customers need to make necessary behavior changes.Publications on developing conservation plans and educating customers about conservation are available through the Office of Drinking Water (see sources at bottom right).
4. **Check water levels** in your wells or other sources at least weekly and keep good records. Look for changes that occur over time, especially a continuing decline in the water level.

5. **Watch for other indicators** of a potential water shortage, including sediments in the water, air in the water when taps are turned on, unusual water quality problems, and increased customer complaints. Be particularly attentive to excessive usage by customers.

6. **Identify an alternative water supply** (water tanker truck, bottled water, intertie to another system) and, if possible, establish intertie agreements for use in case of supply disruption. Brochures and guidelines on the use of trucked water, emergency interties, and emergency disinfection are available through the Office of Drinking Water (see sources at bottom right).

7. **Have emergency sources tested.** If you have an existing emergency or backup source, get it tested now for coliform and nitrates so it is ready to go online if there is a water shortage. (See Page 6)

8. **Find leaks and repair them.** Leaky water pipes can waste large amounts of water. Reducing water loss through leak detection should be a priority for every water system with more than 20 percent unaccounted-for water – even more so when faced with drought or other potential limits on supply.

Leak detection can be conducted by a utility crew or a contracted firm. Evergreen Rural Water of Washington offers training on leak detection and water audits. It also provides leak detection service to systems with fewer than 10,000 connections in cooperation with the Office of Drinking Water. For more information about leak detection resources, call Evergreen Rural Water of Washington at (800) 272-5981.

9. **Technical assistance and funding** are available to help water systems in a supply emergency. Office of Drinking Water staff and a number of other programs provide information and technical assistance to water systems; find out who they are and know their numbers before

you need them. Some important resources can be found on Page 7.

10. Be prepared to issue a health advisory.

A service interruption caused by a water shortage (drought or mechanical) not only affects water quantity but also has the potential to create a water quality problem. Health advisories are issued when the water system, in coordination with state or local health officials, believe there is a drinking water health risk. Advisories usually take the form of a Drinking Water Warning or Boil Water Order. Office of Drinking Water officials work closely with system operators to determine if an advisory is needed and help develop clear, effective messages.

The Office of Drinking Water provides fact sheets, brochures, forms, and templates to help water systems be prepared to issue a health advisory. Learn about health advisories and how to issue them before you actually need them by visiting the Office of Drinking Water Web site at <http://www.doh.wa.gov/ehp/dw/> and selecting the *Health Advisories* heading.

Office of Drinking Water publications referenced in this edition of *Water Tap* are available:

- ◆ Through the Office of Drinking Water drought Web site at <http://www.doh.wa.gov/ehp/dw/drought/drouthome.htm>
- ◆ Through the Office of Drinking Water publication page at <http://www4.doh.wa.gov/dw/publications/publications.cfm>
- ◆ By calling Amy Koch at (800) 521-0323

Emergency Drinking Water Sources: Will They Be Usable In a Drought?

While you can't anticipate most emergencies, you can prepare for the possible use of an emergency water source. More than 700 Group A public water systems in Washington report having one or more emergency sources, defined in state regulations as:

- Approved by the Washington Department of Health (DOH) for emergency purposes only.
- Not used for routine or seasonal water demands.
- Physically disconnected.
- Identified in the water system's emergency response plan.

When there is a drought, a water system and its customers should first conserve water as much as possible. Emergency sources should be used only when conservation efforts are unable to balance demands with dwindling supplies. If you anticipate possible use of an emergency source, DOH recommends that you take action in advance to ensure water from this source will be safe and provide a reliable level of production.

The main health concern is acute microbiological and chemical contamination. Bacteria and other microorganisms can cause immediate and severe illness. Unfiltered or inadequately-treated surface water, shallow hand-dug wells, wells directly influenced by surface water, unsealed wells, and poorly constructed or protected springs are examples of sources at high risk of microbiological contamination. In addition, nitrate levels above the drinking water standard pose an immediate risk to unborn babies and children under 12 months old.

If your system is considering the possibility of bringing an emergency water source on line as a response to drought conditions, take the following actions.

- **Consult with your drinking water regional office.** Contact them and discuss the construction of the source, potential sources of microbiological contaminants in the wellhead area or watershed, and the pumping and pump-



control system. The source may need physical improvements before it is used, even for just a short time.

- **Disinfect wells.** If your emergency source is a well, plan to disinfect it before placing the source in service.
- **Sample sources and treat accordingly.** At a minimum, collect two coliform samples and one nitrate sample from each emergency source before bringing it online. If coliform are present or the nitrate standard is exceeded, the source must be appropriately treated. Continuous chlorination with sufficient contact time before the first point of service will be required for wells with detected coliform. Your regional office can consult with you about disinfection treatment.
- **Warn your customers.** If you plan to use an unfiltered surface water source, you must issue a health advisory to all customers before and during the period the source is in service. Use of an unfiltered surface water source or an inadequately-treated groundwater source under the direct influence of surface water requires very close coordination with your regional office.
- **Continue coliform sampling.** Once an emergency source is operational, expect to sample it for coliform bacteria at least once every week, unless your regional office specifies an alternate monitoring schedule.
- **Continue chemical sampling.** If the emergency source operates longer than two months, expect to sample for complete inorganic and organic chemicals as prescribed by your regional office.

Finally, if for any reason you bring an emergency source online without any advanced planning or sampling, you must immediately issue a Boil Water Advisory to your customers. Consult with your regional office about appropriate tools and language for a health advisory.

Drought-Related Resources

Office of Drinking Water

After Hours Hotline: (877) 481-4901

Northwest Regional Office:
(253) 395-6750

Southwest Regional Office:
(360) 664-0768

Eastern Regional Office:
(509) 456-3115

Drought coordinators:
(360) 236-3134 and (360) 236-3153
<http://www.doh.wa.gov/ehp/dw/>

It's Not Too Late! Sign Up for Drought Readiness and Response Workshops

The Department of Health, in conjunction with Evergreen Rural Water of Washington, is providing drought readiness and response workshops for small water systems. The workshops started in late June and run through the end of July. It's not too late to sign up for one of the last three workshops:

- July 21 – Mount Vernon
- July 26 – Richland
- July 28 – Kelso

These one-day classes for public water system operators will provide critical information about how to prepare for and respond to drought conditions. Topics include managing and conserving water to lower the risk of shortages and outages; emergency planning and actions for water shortages; identifying and using emergency water sources; and how to conduct a water audit and perform leak detection. The workshops are free and have been approved for 0.6 CEU.

To register, call Evergreen Rural Water at (800) 272-5981 or register online at <http://www.erwow.org>

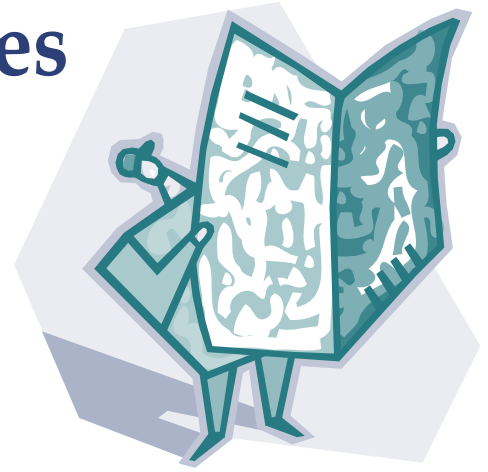
Tools for Drought Emergencies

During a drought emergency, there are a number of special administrative tools available to help water systems respond to emergency water shortages. In addition to technical assistance from the Department of Health, the Department of Ecology (Ecology) is authorized to expedite its processing of emergency water rights, or temporary transfers, and changes to existing water rights.

The expedited processing time required under Ecology's drought authority is 15 days. This rapid response for water resource decisions can be critical for water systems trying to respond to drought-related water shortages. For more information about these tools and application forms, go to the Washington State Drought Web site, <http://www.washingtondrought.org> and click on *Application Forms for Drought Permits*, or call Ecology's Drought Emergency Hotline at (800) 468-0261.

Emergency Drought Funding

For more information about emergency drought funding and an application, go to the Washington State Drought Web site, <http://www.washingtondrought.org> and click on the *Drought Emergency Funding* link. A copy of the emergency rule, eligibility requirements, and a grant application can be downloaded. Additional information is also available from Ray Newkirk, Department of Ecology, (360) 407-6630 or rnew@ecy.wa.gov



Publications - See Page 5 for ways to order publications

For Systems Operators

Truck Transportation – Emergency Water Supply for Public Use (DOH PUB. #331-063)

Guidelines for Preparation of Water Shortage Response Plans (DOH PUB. #331-301)

Water Conservation Planning Handbook (Published jointly with the Department of Ecology)

Water Use Efficiency fact sheets (10) (http://www.doh.wa.gov/ehp/dw/our_main_pages/water_use_efficiency_factsheets.htm)

For Consumers

Conservation Guidelines (1-8) (DOH PUB. #331-120)

Guideline #1 - Indoor Water Conservation

Guideline #2 - Outdoor Water Conservation

Guideline #3 - Lawn Watering

Guideline #4 - Indoor Water Audit

Guideline #5 - Meter Reading & Leak Repair

Guideline #6 - Soil Preparation & Planning

Guideline #7 - Irrigation & Landscaping

Guideline #8 - Salmon Recovery

Drought Related Web Sites

Office of Drinking Water Drought Web site - <http://www.doh.wa.gov/ehp/dw/drought/droughthome.htm>

Washington State Department of Ecology
<http://www.ecy.wa.gov/programs/wr/drought/2005/drthm.html>

U.S. Environmental Protection Agency (EPA) - <http://www.epa.gov/owm/water-efficiency/drouhome.htm>

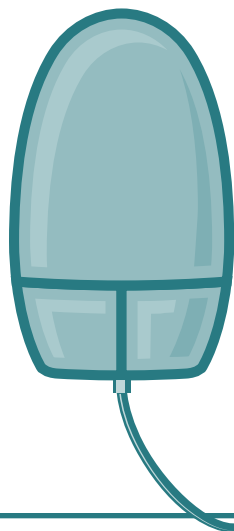
National Oceanic and Atmospheric Administration (NOAA) -
<http://www.drought.noaa.gov>

American Water Works Association (water use efficiency) - <http://www.waterwiser.org>

Saving Water Partnership - <http://www.savingwater.org>

Evergreen Rural Water of Washington -
<http://www.erwow.org> or (800) 272-5981

Washington State Drought Web site -
<http://www.washingtondrought.org>



In This Issue

The following people contributed to the production of this issue of *Water Tap*: Denise A. Clifford, Ginny Stern, Leslie Thorpe, Jim Hudson, Sean Orr, Paula Smith and Linda Waring.

The Department of Health, Office of Drinking Water, publishes the *Water Tap* to provide information to water system owners, water works operators, and others interested in drinking water.

Mary Selecky, Secretary of Health

Janice Adair, Assistant Secretary, Division of Environmental Health

Denise A. Clifford, Director, Office of Drinking Water

Comments, questions, story ideas, articles and photographs submitted for publication are welcome. Please address correspondence to Editor, *Water Tap*, Office of Drinking Water, PO Box 47828, Olympia, WA 98504-7828, or e-mail linda.waring@doh.wa.gov. Past issues are also available by contacting the editor or visiting the Web site at http://www.doh.wa.gov/ehp/dw/our_main_pages/watertap.htm

